MASSACHUSETTS UNIFIED WATERSHED ASSESSMENTS, RESTORATION PRIORITIES, AND RESTORATION ACTION STRATEGIES

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Acknowledgments

In 1993 we launched the *Massachusetts Watershed Initiative* to improve our ability to protect the environment through a geographic-based approach that took a holistic look at environmental issues. Central to this concept was a shift from top-down environmental management to a bottoms-up approach that actively engages local governments, citizens, business and other community partners in preventing and restoring environmental problems in their own communities.

This final report reflects comments received and issues raised from our 27 watershed teams (approximately 350 people from watershed and conservation organizations, businesses, and municipal, state and federal government agencies) and the Watershed Initiative Steering Committee. We wish to thank them for their time and generous support to produce this assessment report.

The Massachusetts Watershed Initiative is an excellent example of how to implement a locally-driven watershed approach statewide and identify necessary projects to restore and preserve our water quality and aquatic habitat.

We would also like to give special recognition to the following individuals for their extra effort to complete this assessment. In alphabetical order, they are:

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MASSACHUSETTS UNIFIED WATERSHED ASSESSMENTS, RESTORATION PRIORITIES, AND RESTORATION ACTION STRATEGIES

I. INTRODUCTION

A. Clean Water Action Plan Summary

In February, 1998 President Clinton released the Clean Water Action Plan which presented the President's broad vision of watershed protection and which integrates the protection and restoration of America's coastal and estuarine waters, surface freshwater, wetlands, groundwater, and natural resources with traditional clean water and human health objectives. It also calls for a new inclusive and cooperative approach to achieving clean water goals. In accordance with that plan, each state has been asked to work with watershed stakeholders and interested citizens to: 1) identify watersheds having critical water quality problems and 2) to focus resources and implement effective strategies to solve those problems. The intended result was to establish a comprehensive framework to help unify various existing assessments of state watersheds, define priorities for restoration, and develop action strategies to address problems. The Clean Water Action Plan also calls for states to cooperate with federal, state, and local agencies, watershed-based organizations, and the public to develop watershed restoration action strategies.

B. Setting Priorities with Locally-Led Efforts

The Massachusetts Watershed Initiative program is being implemented through the work of 20 full-time team leaders and 27 watershed teams composed of local citizen groups, town officials, and state and federal agency field staff. These groups work together to set priorities based on existing watershed assessments, the 305(b) report, the 303(d) list, shellfish areas in need of restoration and lists of threatened waters and habitats that based on water and habitat assessments and landuse planning studies. Once restoration and protection needs are identified strategies for each watershed might include elements such as:

- identification of measurable environmental and programmatic goals;
- identification of impaired waters and sources of water pollution including where possible the relative contribution of those sources;
- implementation of pollution control and natural resource restoration measures;
- schedules for implementation of needed restoration measures;
- implementation of total maximum daily loads (TMDLs) for pollutants exceeding state water quality standards;
- implementation of source water assessment and protection programs;
- needed monitoring and evaluation to assess water quality conditions and assess progress in achieving goals;
- identification of funding mechanisms to support implementation of needed restoration measures; and
- development of a process for cross-agency coordination and public involvement.

Our overall goal is to accelerate watershed restoration and protection in a coordinated and comprehensive manner through the building of partnerships. This report describes the *Massachusetts Watershed Initiative* and how this approach meets this objective and the other goals of the *Clean Water Action Plan*. Through this approach Massachusetts will identify restoration and preservation priorities in each watershed and develop action strategies to address those priorities.

II. RESTORATION PRIORITIES

A. Watershed Categories

All 27 major watershed in Massachusetts contain both areas in need of restoration/protection (Category I) and of protection (Category II). For example, all 27 major watersheds contain waterbodies that do not now meet and face imminent threat of not meeting water quality standards and other natural resource goals (streamflow problems and/or fish passage obstructions occurring in all of the 27 watersheds). Each of these watersheds have multiple waterbodies listed on the 1998 303(d) list (over 1,200 river reaches, lakes and ponds statewide) subject to the TMDL process. As such, both near and long-term funding is needed for restoration and protection projects in all 27 basins.

As described in Section III, the *Massachusetts Watershed Initiative* is based on a five year cycle that includes specific assessment and implementation phases. Under this process, extensive implementation begins after completion of three years of outreach, monitoring, assessment, and restoration planning have occurred.

For the purposes of the Clean Water Action Plan and the Unified Watershed Assessments, Massachusetts has identified the ten watersheds that are in their implementation phase during 1998 and 1999 as the Category I watersheds for the federal FY98 and FY99 funding cycles. These watersheds have completed the comprehensive outreach, monitoring, and assessments, and restoration priorities have been clearly outlined. The other seventeen (17) watersheds in Massachusetts will be prepared for implementation of both Category I and Category II type projects in future years as research, monitoring, assessment, and restoration planning projects are completed

The Ten (10) Priority Watersheds (Category I):

- Charles
- Concord
- Farmington
- Hudson
- Housatonic
- North Coastal
- South Coastal
- Taunton
- Ten Mile
- Westfield

These ten watersheds have significant areas of impaired resources, including over 522-miles of river and stream reaches and 216 lakes, ponds and embayments with impaired water quality as identified by the 303(d) list and 286,000 acres of shellfish beds which were closed or restricted during part or all of FY98 due to water quality impairment.

As described below, the watershed planning process has been used to identify areas that do not meet, or face imminent threat of not meeting clean water or other natural resource goals. The causes of these threats include both point and non-point sources of pollution, aquatic and habitat impacts, and water flow reductions.

While these ten watersheds will be our highest priorities, there may be projects within other watersheds that are identified as high priority projects through the watershed planning process. For example, the 27 watershed teams recently completed work plans for each watershed. These plans are based on existing assessments and extensive input from team members and other community partners and will be used to identify the most pressing priorities.

C. Project Identification

We have listed in Appendix C the priority unfunded projects from the 10 watersheds listed above. These specific projects were selected following an extensive review and priority setting process. However, in addition to identifying specific projects, we also recognize that certain broad issues are priorities for our watershed protection efforts. The public participation and review process undertaken to prepare this report identified the following NPS and habitat restoration priority issues:

- increase implementation of BMPs on agricultural lands;
- develop management plans to address urban stormwater related issues;
- expand education and BMP program to reduce excessive nutrients in lakes;
- establish, protect, and restore forest buffers along rivers in agricultural, urban, and suburban land uses;
- protect sensitive forest watershed land through expanded landowner outreach:
- provide technical assistance to increase acreage in Mass. Forest Protection Law program (Chapter 61) and increase BMP implementation;
- implement additional forestry BMPs on state lands in water supply watersheds;
- increase implementation of BMPs on roads managed by state and municipal governments;
- implementation of BMPs to address non-point pollutant sources;
- implementation of pollution prevention measures (preservation vs. restoration)
- implement technical assistance to local governments in implementing existing state wetlands, river protection, storm water protection and septic system laws, regulations and guidances and in establishing local bylaws to protect water resources from negative impacts of poorly planning growth;
- focus state, federal, and local land acquisition and protection programs in watershed areas where sensitive water and natural resources are most threatened;
- implement fish passage and aquatic habitat restoration projects as outlined in watershed assessments:

- implement state guidelines for basin water withdrawals and water conservation programs;
- implement coastal embayment and harbor non-point BMPs in order to improve and open closed or restricted shellfish beds;
- implement comprehensive wetlands restoration plans
- establish TMDLs for 303(d) waters.

Our process and commitment to this watershed based protection have positioned Massachusetts to take maximum advantage of the funds and assistance that will be made available as part of the Clean Water Action Plan. An established watershed assessment and project development process and available potential projects have the potential to be a national demonstration of the success of this approach.

D. Implementation

In addition to being given priority under the Clean Water Action Plan, the watershed team identified projects are given funding priority by the various grant and loan programs administered by EOEA agencies. This is a critical element in the process because it helps to ensure that eligible priority projects are funded based on watershed priorities.

Watersheds in their implementation year (Year 4) receive funding targeted for project implementation. For planning and assessment funding sources, funding is targeted towards watersheds in year 2 and 3 of the basin cycle. Some flexibility is maintained so that high priority projects that do not fit in the funding cycle, but may serve a greater regional need, can also be funded.

While existing funding programs meet some needs, Massachusetts consistently receives more funding requests than funds are available. Details on the unfunded FY98 and FY99 projects for the 10 priority Category I watersheds are provided in Appendix C.

Massachusetts Watershed Designations

A map has been provided to show the watersheds and how they each fit into the five year cycle. Massachusetts divides the state into 27 major watersheds which can be nested within the U.S.G.S. eight-digit hydrologic units. The Commonwealth, along with other New England States, found extreme difficulty using the 8-digit (or the 11 or 14 digit) hydrologic units requested by EPA Washington since these drainage areas are too large for planning detailed work or for identifying specific project needs A map however is included in Appendix B of this report which delineates the 27 major watersheds and a table is included in Appendix A which indicates which of the 27 watersheds are within the U.S.G.S. 8-digit hydrologic units.

Four of the ten Category I watersheds (Ten Mile, Housatonic, Hudson, Farmington) are interstate watersheds and it is hoped that the Clean Water Action Plan program will offer new ways for states to coordinate and improve watershed restoration and protection efforts.

Section IV presents, in summary fashion, the total funding requests and the total actual funding levels for various grant/loan programs in all 27 watersheds. This summary shows available

funding does not meet funding requests. Appendix C indicates the unfunded projects within the Category I priority watersheds, including whether they are restoration or preservation projects.

III. MASSACHUSETTS WATERSHED INITIATIVE

A. Overview

There are several important steps needed to identify watershed concerns, obtain support information or data, and assess watershed conditions prior to setting restoration priorities. *The Massachusetts Watershed Initiative* incorporates all of these steps while building local support for needed restoration projects. Since its inception in 1993, the *Watershed Initiative* has completed an extensive process of outreach, research/monitoring, and assessment for nearly all of the 27 major watersheds into which the state is divided.

Interdisciplinary watershed teams, led by full-time team leaders, are actively working through the Initiative's five year watershed planning process which develops implementation strategies based upon unified assessments of each watershed within the state. Grant programs to build local watershed protection capacity have distributed over \$1 million to watershed associations, regional planning agencies, and stream teams over the past three years. Through this process the *Massachusetts Watershed Initiative* program has identified and continues to identify priority restoration and protection projects within each of the program's 27 watersheds.

B. Process and Participants

The Watershed Initiative is a statewide effort to create public/private partnerships to manage and protect the environment using the natural boundaries of the Commonwealth's twenty-seven major watersheds as the key planning unit. Through these partnerships, the Initiative seeks to involve local watershed interests in identifying issues of concern and setting priorities for protective and remedial actions in the watersheds. Together, the local partners and state and federal agencies work to achieve measurable improvements in environmental quality; habitat protection and restoration; improved access to waterways; improved local capacity to protect resources; and, shared responsibility for watershed protection and management. Building local protection capacity is really the foundation goal for the program, as the majority of watershed protection efforts are implemented locally through implementing state environmental laws and guiding sustainable growth. While identifying and implementing restoration projects is greatly enhanced through the Watershed Initiative, future protection of sensitive resources can only be achieved through this type of locally-led program.

The EOEA Teams, one dedicated to each watershed, are a critical element of the *Initiative*. These teams, which include staff from all EOEA agencies, federal agencies, watershed associations, regional planning entities, municipalities, local groups and citizens, work together to conduct comprehensive outreach, research, assessment, planning, permitting and implementation of immediate and long-term actions. Local stewardship through partnering in citizen-based Stream Teams and other venues is fundamental to the MWI as we seek to increase and institutionalize the role of communities in preventing environmental problems and improving local decisions to protect and restore local waterways.

The MWI, among other things, includes a strategy to: (1) address point and nonpoint source pollution on a comprehensive watershed basis, (2) improve inter-agency coordination to maximize limited resources, and (3) move toward community-based decision making through collaborative partnerships among all public and private watershed interests.

D. Rationale/Process

The Watershed Initiative is organized on a five-year cycle of events. The goal of the five-year cycle is to identify and address high priority problems within each watershed. The process involves broad-based consensus building among state and federal agency personnel and watershed stakeholders. The first three years of the cycle concentrate on developing a strong watershed partnership through extensive outreach efforts, problem identification, monitoring activities and general watershed assessment. However, where adequate assessment and planning have already occurred, restoration and protection actions are taken each year.

Year four culminates in the development of a Watershed Action Plan which sets forth comprehensive implementation strategies and the specific actions necessary to address priority problems. These implementation actions continue until implementation is completed, which may take several years. Year five continues with the implementation activities while also evaluating the previous four years work. This evaluation process sets the stage for the next five-year cycle.

The state's 27 major watersheds are divided into groups of five basins and staggered so that in any one year about five basins are in each phase of the five-year cycle. A summary table of the five-year cycle and a map of the 27 basins follow:

THE MASSACHUSETTS WATERSHED INITIATIVE'S FIVE YEAR CYCLE General Summary of Yearly Activities

YEAR/ONE: OUTREACH

- Identifying and compiling all available information previously collected within the watershed including those related to existing water quality problems.
- Identifying information gaps and what additional information is needed and how it should be obtained.
- Conducting outreach to build stakeholder involvement, learn local concerns/issues, and begin development of priorities for action.

YEAR TWO: RESEARCH/MONITORING

- Fill in information gaps;
- Conduct water and habitat monitoring to address watershed concerns;
- Review and incorporate additional information obtained from watershed interests;
- Continue outreach to build a strong watershed constituency.
- Begin to conduct facility inspections to determine compliance with discharge permits.

YEAR THREE: ASSESSMENT

- Assess watershed conditions including current water and habitat conditions and threats;
- Determine causes and sources of impairment;
- Develop solutions to immediate problems;
- Review data together with watershed interests, identify major priorities and begin to develop grant applications.

YEAR FOUR: PLANNING/IMPLEMENTATION

- Finalize priorities through the development of a Watershed Action Plan.
- Identify, develop and implement solutions;
- Solicit available funding and prepare grant proposals;
- Prepare plans to mitigate watershed problems;
- Issue/Re-issue NPDES permits;
- Provide technical support.
- Include watershed interests in all facets of planning and implementation.

YEAR FIVE: IMPLEMENTATION AND EVALUATION

- Implement action items
- Re-evaluate basin team activities;
- Update information, make changes for next cycle;
- Continue implementation together with watershed interests.

E. Integration of Mandatory Program Elements

The accompanying flow chart indicates the general sequence of events which integrates the requirements of section 305(b) (Summary of Water Quality), 303(d) (List of Impaired Waters) and TMDL (Development of Total Maximum Daily Loads) process into the *Watershed Initiative*. In addition, extensive input from communities and local partners are part of the watershed planning process.

During the first two years of the *Watershed Initiative* all sources of information are identified and data is collected where necessary to fill information gaps. That information is then used to develop water quality and habitat assessments for each watershed during year 3 of the cycle. Although the Department of Environmental Protection (DEP) is responsible for developing water quality assessments to meet federal requirements, the assessments are in the process of being expanded to include other watershed parameters, such as habitat and land use assessments. In addition, watershed teams and other agencies are asked to provide comment on assessments when they are in draft form. The water quality assessments are then used to develop and update the 305b report that is submitted to EPA bi-annually.

The water quality assessments conducted during year 3 of the cycle are also used to identify waters which should be included (or removed) from the state list of impaired waters based upon new data and information collected during the previous year. The 303(d) list identifies waterbodies in need of further clean-up and the watershed team is used as the primary vehicle to help prioritize those waters for TMDL development. The TMDL process provides the mechanism for allocating allowable pollutant loads between point and nonpoint sources. In this way the DEP and the watershed teams receive continual input on the development of both the 303d list and priority waters for TMDL development.

As previously stated, the TMDLs for any watershed will be prioritized through the watershed teams. As TMDLs are developed they will be incorporated into the Watershed Action Plan that will be developed during year 4 of the cycle. The close working relationship of basin teams and stream teams in each watershed offers high potential for successful implementation on a priority basis.

The funding mechanisms for TMDL implementation, as well as other watershed priorities, will vary from watershed to watershed and from project to project. DEP, however, has revised its regulations to provide more priority points for SRF funding and for grant funding under the 319, 104(b)3 and 604(b) funding programs where the project addresses issues identified in the Watershed Action Plan. As such, funding priority is given to those projects identified as team priorities.

Section IV of this report summarizes the project funding through various state and federal programs. In many cases, however, it is expected that local action and funding sources will be used to implement TMDLs. In other cases regulatory action or simply changes in the traditional way of "doing business" may be all that is required to effect implementation of best management practices.

The final phase in the five-year cycle is the continued implementation and evaluation of the watershed action plan and TMDLs. This may include re-assessing priorities and/or simply project tracking to determine success or failure of any implementation strategy. This five-year cycle approach has been formally incorporated into the federal (EPA Region 1) and state (DEP) Performance Partnership Agreement. A summary table taken from that agreement is attached. (Appendix B)

IV. FUNDING PROGRAMS SUMMARY

The following table summarizes the 1998 grant and loan program funding for the major funding sources for the Initiative. The information is provided to demonstrate the overall need and priority projects that continue to need funding support. It can be seen that there is a long-term need within the Commonwealth to provide funding for corrective measures to be employed.

The table is a general summary of program funding for the State Revolving Loan Program (SRF); the 319 program (non-point source reduction implementation); the 604b program (water quality management and assessment); the 104(b)(3) (wetland and water quality) program, the Riverways grant program, the MWI comprehensive and capacity building grant program, the EOEA Planning for Growth grant program, the EOEA Self-Help Land Acquisition Program, the CZM Citizen Monitoring grant program, and the CZM Coastal Remediation grant program. The table includes the total amount of funds awarded during fiscal year 98 and most importantly the amount requested and that amount still remaining unfunded.

The grant and loan programs available for potential funding include, but may not be limited to, the following:

SRF - State Revolving Fund
319 - Nonpoint Source Program
604(b)- Water Quality Management Planning
104(b)(3)- Wetland and Water Quality
Planning for Growth Grants
Watershed Capacity Building Grants
Watershed Comprehensive Planning Grants
Lakes and Pond Restoration Grants
Conservation District Grants
Volunteer Monitoring Grants
Coastal Pollutant Remediation (CPR) Program
Research and Demonstration program
Urban River Grants Program
Self-Help Land Acquisition Program

V. CONCLUSION

The Massachusetts Watershed Initiative and the five year planning and implementation process meets objectives of the Clean Water Action Plan by implementing the watershed approach on a comprehensive basis statewide. Through the Watershed Initiative, watershed teams are charged with developing watershed plans that unify existing assessment processes and identify areas in each watershed that:

- 1. do not meet, or face the imminent threat of not meeting, clean water and other natural resource goals;
- 2. meet goals but need action to sustain and preserve water quality and natural resources;
- 3. are considered high quality resource waters; and
- 4. that need additional information to assess conditions.

Under the *Watershed Initiative*, comprehensive watershed plans developed for each watershed identify restoration priorities and action strategies. The five year planning cycle ensures that for each watershed unified outreach, research, assessment, planning and implementation occurs. This process allows the understanding of the issues in each watershed to continue to grow during each cycle to increase the understanding of specific needs in the watershed. Each year teams develop annual workplans that identify specific outreach, research, assessment planning and implementation projects that support the activities related to the five year planning cycle.

The priorities established in the comprehensive watershed plans and annual workplans are used to target state resources and grant programs to the highest priority areas. Finally, and most importantly, the watershed teams provide a ongoing mechanism for participation of community partners in the development of priorities and the implementation of action items. Team leaders are charged with working both with team members and with conducting broader outreach to obtain public input into the watershed protection and management process. The process also ensures that the various federal agencies participating in the Clean Water Action Plan can target their resources to the highest priorities in the state based upon priorities identified in the watershed planning process.

As outlined in this report, Massachusetts represents a model for watershed implementation and for fulfilling the goals of the federal Clean Water Action Plan. We have actively supported the federal Clean Water Action Plan and our *Watershed Initiative Steering Committee* (WISC), which is charged with providing guidance on program development, already has active federal partners. At their September 16, 1998 meeting, after a full and detailed discussion, the WISC voted unanimously to support the Massachusetts Unified Watershed Assessment and Restoration Strategy. It was the strong opinion of the WISC that EPA should encourage flexibility in the manner in which the states meet the requirements of the Clean Water Action Plan in general and the Unified Assessment in particular (Appendix D).

We feel this report fully meets the expectations of the Unified Assessment guidance and we look forward to working with all the federal partners as we continue implementing strategies within the ten priority Category I watersheds.

GENERAL SEQUENCE OF ACTIVITIES

| PROCESS | ACTION | WATERSHED CYCLE | PUBLIC/AGENCY REVIEW-COMMENT | | |
|-----------------------------------|---|--|--|--|--|
| Watershed Outreach | Outreach; Public Input; Identify Data Gaps | Year 1 | Yes, Informal | | |
| Watershed Monitoring | Info gathered; water quality monitored | Year 2 | Yes, Informal - Watershed team priorities included in monitoring plan where appropriate | | |
| Watershed Assessment of Data/Info | Data /info collected during year 1&2 are assessed and water quality assessment report generated | Year 3 | Yes, Teams and agencies requested to review Water Quality Assessment in draft form. This information is then used to produce both the 305(b) report and 303(d) list. | | |
| 305(b) Report | State-wide assessment of water quality | Prepared in Year 3 | Yes, Formal - Teams & agencies asked to provide input into 305(b) report which is produced every two years. | | |
| 303(d) List | Impaired/threatened waterbodies | On-going | Yes, Formal - Teams asked to comment & provide input into development of the 303(d) list. | | |
| TMDL | Prioritized by basin | Those basins in Year 3 and 4 or other priority waterbodies | Yes, Formal - Teams asked to comment on draft TMDLs, to incorporate completed TMDLs into the watershed action plan & to help in implementing corrective actions. | | |
| Implementation | Grants developed and targeted; Watershed Action Plan Developed, Local assistance sought to resolve non-point problems, Implementation includes voluntary actions, funding, permitting, and enforcement where necessary. | Year 4, implemented by Watershed Teams | Yes, formal actions | | |
| | | | | | |

TOTAL PROGRAM FUNDING SUMMARY (1998)*

| | SRF | 319 | 604(b) | 104(b)(3) | EOEA - MWI Capacity Building Grant | EOEA - PFG Comprehensive Planning Grant | Riverways Urban Rivers Grant | Self Help Land Acquisition Program | CZM Coastal Remediation Program | TOTALS |
|-----------------------------|-----------------|-------------|-----------|-------------|--|---|------------------------------------|--|---------------------------------------|-----------------|
| Total Project/Fund Requests | \$1,502,995,636 | \$1,604,675 | \$752,446 | \$1,395,288 | \$390,516 | \$3,554,463 | \$69,483 | \$20,138,010 | \$1,395,863 | \$1,532,296,380 |
| Total Funds Awarded | \$ 206,411,000 | \$445,719 | \$192,559 | \$613,536 | \$240,516 | \$778,640 | \$49,483 | \$8,923,750 | 618,308 | \$218,273,511 |
| Total Unfunded Amount | \$1,296,584,636 | \$1,158,956 | \$559,887 | \$781,752 | 150,516 | 2,775,823 | \$20,000 | \$11,214,260 | \$777,555 | \$1,314,023,385 |

^{*} For all 27 watersheds